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EXAMINER
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ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
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1745

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06/29/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/619,005

Applicant(s)

ABE ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 32-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 32-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/12/07 has been entered.

This Examiner's letter responds to the amendment submitted along with the foregoing RCE. Applicant has cancelled previously rejected claims 23-31 in favor of new claims 32-37. However, the previously stated ground of rejection has not yet been overcome by the applicant. Refer to the foregoing amendment for substance of applicant's rebuttal arguments and remarks. Accordingly, all NEW claims 32-37 are again rejected over the same art and a newly discovered reference as set forth infra and for the reasons of record.

### ***Claim Disposition***

1. Claims 1-31 have been cancelled.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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3. Claims 35-37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The added material which is not supported by the original disclosure is as follows: (claim 35) “containing glutaronitrile in an amount of 0.01 to 1.0 wt %”.

It is immediately uncertain from the as-filed disclosure how applicant now has arrived at the specifically claimed weight % range for the glutaronitrile compound. For instance, the as-filed disclosure broadly states that the electrolytic solution further contains a dinitrile compound in a small amount of 0.001 to 10 wt %, preferably 0.01 to 5 wt %, more preferably 0.01 to 3 wt %, most preferably 0.01 to 2 wt % [*see applicant's specification at page 3 (lines 33-36), page 5 (lines 1-6 & lines 24-35)*]. At most, TABLE 1 on page 14 reveals the use of glutaronitrile compound in an amount of 0.2 wt % (Example A-7) and 19 wt % (Comparison Example A-3). Other than these disclosures, there is nothing else in the as-filed specification suggesting applicant had possession of the specifically claimed weight % range for the glutaronitrile compound, at least for the end point 1.0 wt % for glutaronitrile, and potentially for the other end point of 0.01 wt %. Moreover, applicant's specification includes a plethora of dinitrile compounds but fails to provide specific direction to recognize that the specific dinitrile compound glutaronitrile can be employed in the specifically claimed amount, and second, neither the generic weight % amounts disclosed in applicant's specification nor the glutaronitrile weight % shown in TABLE 1 support applicant's amendatory language “*the non-aqueous solvent further containing glutaronitrile in an amount of 0.01 to 1.0 wt %*” as instantly claimed.

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It is imperative to clarify how and why the foregoing limitation finds itself clear support in the as-filed specification as the arrival of such a weight % range appears to be completely unsupported, and out of applicant's originally intended invention. Other than the foregoing disclosed values, there is no existence in the specification as filed of other specific magnitudes (*e.g. 0.01 wt %, 0.1 wt %, 1.0 wt % and so on for glutaronitrile*) investigated or studied by the applicants to evidently support applicant's position that such magnitudes of 0.01-1.0 wt % inclusive were or are originally intended by the current disclosure. Therefore, other than attempting to overcome the prior art of record disclosing a wt % of least about 1 % by weight, it is not clear how applicant has arrived at the now specifically claimed magnitude.

Applicant is required to cancel the new matter in the reply to this Office Action.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese document 09-161845 (hereinafter referred to as "*the JP'845*") in view of Gagne et al 4475994.

Concerning claims 32 and 35:

The JP'845 discloses a non-aqueous electrolyte secondary battery comprising a non-aqueous electrolyte solution (TITLE) including organic solvents and a lithium compound dissolved (*the electrolyte*) therein (ABSTRACT). The JP'845 teaches lithium batteries (SECTION 0001-0002/ABSTRACT) comprising a positive electrode and a negative electrode (ABSTRACT) wherein the negative electrode is a carbonaceous materials having a  $d_{002}$  lattice distance of 0.3365 nm or more (SECTION 0009 & 0012).

The JP'845 discloses the use of dinitrile compounds in the electrolytic solution (SECTION 0015) including at least succinonitrile and glutaronitrile (SECTION 0025-0026). EXAMPLE 6 exemplified the use of glutaronitrile in electrolytic solutions (EXAMPLE 6). The JP'845 clearly discloses that all of the solvents can be used alone or in combination, that is, mixture thereof (SECTION 0026, 0015, 0002). *Thus, the JP'845 at once envisage the combined use of the aforementioned electrolyte solvents.*

EXAMPLES 5-6 exemplified the use of nitrile compounds including propionitrile in an amount of 17.8 vol %; and glutaronitrile in an amount of 19 vol % of the electrolytic solutions (EXAMPLES 5-6).

Disclosed is the use of cyclic carbonate such as propylene carbonate, ethylene carbonate and the likes; cyclic ester such as  $\gamma$ -butyrolactone; linear carbonate such as dimethyl carbonate,

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diethyl carbonate, ethyl methyl carbonate; and/or ether such as tetrahydrofuran and the likes (SECTION 0002, SECTION 0002, 0015, 0020, 0024-0026/ EXAMPLE 1-8 & COMPARATIVE EXAMPLES 1-4). **EXAMPLES 1-8** and **COMPARATIVE EXAMPLES 1-4** show the combined use of linear carbonate with cyclic carbonates or a cyclic ester or an ether including the following volume percents: 20:80 vol %, 50:50 vol %; 18:82 vol %; 30:70 vol %; 17:83 vol %; 25:75 vol %; 17.8:82.2 vol %; 19:81 vol %; 22:78 vol %. *Thus, the specific volume ratios are disclosed with sufficient specificity. Additionally, it is noted that since the claimed volume ratios do also encompass a large range of possible volume ratios (i.e. 1:9 to 9:1 or 1:99 to 99:1), the JP'845 also meet the specific claimed requirement.* Lastly, given that the JP'845 clearly discloses that all of the solvents can be interchangeably used or used in combination, that is, any mixture thereof (SECTION 0026, 0015, 0002). *Thus, the volume ratios disclosed in EXAMPLES 1-8 and COMPARATIVE EXAMPLES 1-4 are equally applicable to any combination of solvents.*

Concerning claims 33 and 36:

The JP'845 teaches lithium rechargeable batteries (SECTION 0001-0002/ABSTRACT)

With regard to claims 34 and 37:

The JP'845 teaches the negative electrode being a carbonaceous materials having a  $d_{002}$  lattice distance of 0.3365 nm or more (SECTION 0009 & 0012).

The JP'845 disclose an electrolytic solution according to the foregoing aspects. However, the preceding prior art does not expressly disclose the specific amount of the dinitrile compound.

As to claims 32 and 35:

Gagne et al disclose an electrochemical cell (ABSTRACT) comprising an aprotic solvent containing a dissolved salt (COL 3, lines 61-64) wherein nitriles such as succinonitrile,

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adiponitrile among others are added to the electrolyte in an amount of at least about 1 % by weight of thereof to the total weight of the electrolyte solution to stabilize the electrolyte. *Thus, Gagne et al teach with sufficient specificity the use of a specific amount of specific dinitrile compounds.*

With these references, it would have been obvious to one skilled in the art at the time the invention was made to use the specific amount of the dinitrile compound of Gagne et al in the battery of the JP'845 because Gagne et al teaches that nitriles are added to the electrolyte in the claimed amount to stabilize the electrolyte. Thus, the specific nitrile amount provides improved chemical stability. *In this particular, the teachings of Gagne et al are found pertinent and applicable to the teachings of the JP'845 and the field of applicant's endeavor as Gagne et al is strictly concerned with the addition of nitrile to electrolyte to stabilize it regardless of the specific chemical system (i.e. organic or aqueous), and thus, one of ordinary skill in the art would have easily arrived at the claimed invention by simply looking at the teachings of Gagne et al. Furthermore, the teachings of Gagne et al are found to be fully pertinent to the JP'845 as well as the field of applicant's endeavor because they both address the same problem of employing dinitrile compounds in their respective electrolytic solutions to improve the ion transport characteristics of the electrolyte and the overall performance of the battery. Therefore, Gagne et al and the JP'845 face the same technical difficulties and attempt to resolve such difficulties by relying on the same technical information which identifies dinitrile compounds for that purposes. Certainly, the cited prior art reference are not nonanalogous, and are in the field of applicant's endeavor and reasonably pertinent to the particular problem with which the applicant was concerned. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).*



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Moreover, in this case, a prima facie case of obviousness does exist because the prior art teaches adding the specific dinitrile compound in an amount of at least about 1 by weight, therefore, the invention taught by the prior art certainly allows for concentrations or magnitudes either slightly above or below 1 wt % (*i.e. slightly greater or lower than 1 wt %*), and hence, the disclosed range overlaps or lies inside the claimed range. *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990); In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). *See MPEP 2144.05 [R-1] Obviousness of Ranges*. Likewise, generally, differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

7. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese document 09-161845 (hereinafter referred to as “*the JP’845*”) in view of Kerr et al 6045952.

Concerning claim 35:

The JP’845 discloses a non-aqueous electrolyte secondary battery comprising a non-aqueous electrolyte solution (TITLE) including organic solvents and a lithium compound dissolved (*the electrolyte*) therein (ABSTRACT). The JP’845 teaches lithium batteries (SECTION 0001-0002/ABSTRACT) comprising a positive electrode and a negative electrode

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(ABSTRACT) wherein the negative electrode is a carbonaceous materials having a  $d_{002}$  lattice distance of 0.3365 nm or more (SECTION 0009 & 0012).

The JP'845 discloses the use of dinitrile compounds in the electrolytic solution (SECTION 0015) including at least succinonitrile and glutaronitrile (SECTION 0025-0026).

**EXAMPLE 6** exemplified the use of glutaronitrile in electrolytic solutions (EXAMPLE 6). The JP'845 clearly discloses that all of the solvents can be used alone or in combination, that is, mixture thereof (SECTION 0026, 0015, 0002). *Thus, the JP'845 at once envisage the combined use of the aforementioned electrolyte solvents.*

**EXAMPLES 5-6** exemplified the use of nitrile compounds including propionitrile in an amount of 17.8 vol %; and glutaronitrile in an amount of 19 vol % of the electrolytic solutions (EXAMPLES 5-6).

Disclosed is the use of cyclic carbonate such as propylene carbonate, ethylene carbonate and the likes; cyclic ester such as  $\gamma$ -butyrolactone; linear carbonate such as dimethyl carbonate, diethyl carbonate, ethyl methyl carbonate; and/or ether such as tetrahydrofuran and the likes (SECTION 0002, SECTION 0002, 0015, 0020, 0024-0026/ EXAMPLE 1-8 & COMPARATIVE EXAMPLES 1-4). **EXAMPLES 1-8** and **COMPARATIVE EXAMPLES 1-4** show the combined use of linear carbonate with cyclic carbonates or a cyclic ester or an ether including the following volume percents: 20:80 vol %, 50:50 vol %; 18:82 vol %; 30:70 vol %; 17:83 vol %; 25:75 vol %; 17.8:82.2 vol %; 19:81 vol %; 22:78 vol %. *Thus, the specific volume ratios are disclosed with sufficient specificity. Additionally, it is noted that since the claimed volume ratios do also encompass a large range of possible volume ratios (i.e. 1:9 to 9:1 or 1:99 to 99:1), the JP'845 also meet the specific claimed requirement.* Lastly, given that the JP'845 clearly

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discloses that all of the solvents can be interchangeably used or used in combination, that is, any mixture thereof (SECTION 0026, 0015, 0002). *Thus, the volume ratios disclosed in EXAMPLES 1-8 and COMPARATIVE EXAMPLES 1-4 are equally applicable to any combination of solvents.*

Concerning claim 36:

The JP'845 teaches lithium rechargeable batteries (SECTION 0001-0002/ABSTRACT)

With regard to claim 37:

The JP'845 teaches the negative electrode being a carbonaceous materials having a  $d_{002}$  lattice distance of 0.3365 nm or more (SECTION 0009 & 0012).

The JP'845 disclose an electrolytic solution according to the foregoing aspects. However, the preceding prior art does not expressly disclose the specific amount of the dinitrile compound.

As to claims 32 and 35:

Kerr et al disclose electrochemical storage cells containing additives for liquid organic electrolyte (TITLE/ABSTRACT). Kerr et al's invention relates to organic electrolyte electrochemical storage cells (COL 1, lines 15-20/ COL 2, lines 45-50) such as lithium cells containing an organic liquid electrolyte (COL 4, lines 40-43); the additive may be either used in a primary or secondary cell (COL 4, lines 22-32). The lithium cell of Kerr et al comprises a lithium anode or lithium containing anode (paragraph bridging COL 4-5) and organic electrolytes containing Li-salt (COL 3, lines 15-33) and including carbonate-based solvents (COL 5, lines 29-64).

**(Emphasis added→)** There is particularly disclosed a solvent such as glutaronitrile, in a concentration ranging from about 0.01 wt % to about 1 wt % may be used to facilitate mixing

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additives with constituents of the electrolyte (COL 9, lines 47-57). *Thus, Kerr et al teach with sufficient specificity the use of a specific amount of specific dinitrile compounds.*

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific amount of the dinitrile compound of Kerr et al in the battery of the JP'845 because Kerr et al teaches a solvent such as dinitrile solvents including glutaronitrile, among others, used in the specifically claimed amount facilitates mixing redox additive with other constituents of the electrolyte and/or cathode. Thus, dinitrile solvents such as glutaronitrile when used in the claimed amount assists in the incorporation of additives into the lithium cell. Thus, the teachings of Kerr et al show the desirability of dinitrile solvents such as glutaronitrile for the benefit of integrating or incorporating additional lithium cell elements. Moreover, Kerr et al disclose that the incorporation of the additives including the claimed solvent is beneficial to provide overcharge protection to the cell.

Moreover, in this case, a prima facie case of obviousness does exist because the prior art teaches adding the specific dinitrile compound in an amount of at about 0.01 wt % to about 1 wt %, therefore, the invention taught by the prior art directly use the same amount of the dinitrile solvent, therefore, such a claimed range has been rendered prima-facie obvious by Kerr et al's teachings. *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). *See MPEP 2144.05 [R-1] Obviousness of Ranges*. Likewise, generally, differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical. "[W]here the general conditions of a claim are disclosed

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in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

### ***Response to Arguments***

8. Applicant's arguments with respect to the foregoing claims have been considered but are moot in view of the new ground(s) of rejection. See item 7 supra.

9. Applicant's arguments filed 04/12/07 have been fully considered but they are not persuasive.

10. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). On page 5 of the 04/12/07 amendment, applicant appears to remark that the JP'845, singly or individually, does not disclose the range of amount of the glutaronitrile or adiponitrile. However, the voids of the JP'845 have been filled by the secondary reference Gagne et al'994. Therefore, a prima-facie case of obviousness based upon a combination of two prior art references has been established and fully address all the claimed limitations.

11. In response to applicant's argument that “according to Gagne, the nitrile compound appears to be used in an aqueous electrolyte at a relatively high pH to stabilize the superoxide ion”, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

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12. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. (*Emphasis added*→) Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). *In this particular, the teachings of Gagne et al are found pertinent and applicable to the teachings of the JP'845 and the field of applicant's endeavor as Gagne et al is strictly concerned with the addition of nitrile to electrolyte to stabilize it regardless of the specific chemical system (i.e. organic or aqueous), and thus, one of ordinary skill in the art would have easily arrived at the claimed invention by simply looking at the teachings of Gagne et al.*

*Furthermore, the teachings of Gagne et al are found to be fully pertinent to the JP'845 as well as the field of applicant's endeavor because they both address the same problem of employing dinitrile compounds in their respective electrolytic solutions to improve the ion transport characteristics of the electrolyte and the overall performance of the battery. Therefore, Gagne et al and the JP'845 face the same technical difficulties and attempt to resolve such difficulties by relying on the same technical information which identifies dinitrile compounds for*

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*that purposes. Certainly, the cited prior art reference are not nonanalogous, and are in the field of applicant's endeavor and reasonably pertinent to the particular problem with which the applicant was concerned. See In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).*

13. With respect to applicant's assertion that the volume ratio of 1:9 to 9:1 of the cyclic carbonate and the linear carbonate patentably differentiates from the prior art of record, in the first place, such a volume ratio is an all-encompassing ratio/range as it broadly includes as many potential permutations as possible volume ratios. In the second place, the cited prior art includes **EXAMPLES 1-8** and **COMPARATIVE EXAMPLES 1-4** showing the combined use of linear carbonate with cyclic carbonates or a cyclic ester or an ether including the following volume percents: 20:80 vol %, 50:50 vol %; 18:82 vol %; 30:70 vol %; 17:83 vol %; 25:75 vol %; 17.8:82.2 vol %; 19:81 vol %; 22:78 vol %. Thus, the specific volume ratios are disclosed with sufficient specificity. Additionally, it is noted that since the claimed volume ratios do also encompass a large range of possible volume ratios (i.e. 1:9 to 9:1 or 1:99 to 99:1), the JP'845 also meet the specific claimed requirement. Lastly, given that the JP'845 clearly discloses that all of the solvents can be interchangeably used or used in combination, that is, any mixture thereof (SECTION 0026, 0015, 0002). Thus, the volume ratios disclosed in **EXAMPLES 1-8** and **COMPARATIVE EXAMPLES 1-4** are equally applicable to any combination of solvents.

*The next responses to applicant's arguments were presented by the Examiner in a prior office action and are sustained herein to further address applicant's remarks and for the reasons of record.*

14. Applicant limited himself to contest that "*the rejection of claims 15-20 and 22 under 35 USC 103...is now moot, and should be withdrawn*". The Examiner does not agree for the reasons

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presented above. Other than the foregoing argument, there is nothing else on record to demonstrate how applicant's claimed invention is patentably distinct from the prior art of record.

The following response to applicant's arguments were advanced by the examiner in a prior office action and are presented herein one more time for the reasons of record.

15. The main contention of applicant's arguments is premised on the assertion that neither JP'845 nor Gagne, alone or in combination, suggest or render obvious each and every feature in the claims, interalia, "*the specific dinitrile compound in an amount of 0.001 to 10 wt %*".

Nonetheless, applicant's assertion is insufficient to overcome the prima-facie case of non-patentability. All in all, the JP'845 discloses all the claimed features (*viz. the non-aqueous electrolytic solution, solvent and electrolyte and the dinitrile compound*) with the exception of the specific amount of the dinitrile compound. To make up for this shortcoming, the Gagne reference has been introduced, in combination with the JP'845, because it teaches an electrochemical cell comprising aprotic solvent containing a dissolved salt wherein specific nitriles such as succinonitrile or adiponitrile are added to the electrolyte in an amount of at least about 1 % by weight thereof to stabilize the electrolyte. Thus, the Gagne reference not only specifically names the dinitrile compound to be added to the electrolyte, the Gagne reference also provides specific guidance to choose any one of these two dinitrile compounds because it names or identifies only 13 nitrile compounds in total. Thus, picking and choosing any one (1) of two (2) dinitrile compounds out of a total of 13 nitrile compounds does not involve a complicated selection criteria or a complex degree of selectivity to a person possessing a level of ordinary skill in the art. Succinctly stated, Gagne discloses a reduced or a small number of possible nitrile compounds to be added to an electrolyte so that selecting any one of the 13 nitrile



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compounds simply requires less than ordinary skill in the art. Thus, Gagne specifically names the dinitrile compounds, and at once envisages the use of the specific dinitrile compounds within the claimed weight percent for the benefit of improving electrolyte stabilization.

16. The applicant also argues that any inference of obviousness is rebutted by a showing of unexpected results. See the amendment dated 03/17/06, pages 7-8. In support of his argument, the applicant refers to examples A-1 to A-7 in Table 1 at page 14 of the specification. Having reviewed the showing in the specification, the examiner determines that the applicants have not demonstrated that the claimed subject matter as a whole imparts unexpected results. **In re Klosak**, 455 F.2d 1077, 1080, USPQ (CCPA 1972)(*The appellants have the burden of showing that the claimed subject matter imparts unexpected results.*); **In re Heyna**, 360 F.2d 222, 228, 149 USPQ 692, 697 (CCPA 1966) (“*it is incumbent upon appellants to submit clear and convincing evidence to support their allegation of unexpected property.*”).

As such, the examiner points that the objective evidence of nonobviousness is not commensurate in scope with the instant claims. The electrolytic solutions and battery cells supposedly representative of the claimed invention referred to in the specification are limited to employing an electrolytic solution made of specific amounts of a specific non-aqueous solvent, a specific electrolyte and, above all, a very specific amount of a specific dinitrile compound. Although these exemplified electrolytic solutions and battery cells appear to show some improvement in discharge capacity retention, the applicant have not provided any evidence, much less any explanation, as to why this limited showing is sufficient to support, for example, the multifarious non-aqueous electrolytic solutions made of materially different amounts of dinitrile compounds and materially different additional components included in the claims under

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examination. This especially true in this case since the applicants' own specification indicates that the amounts of dinitrile compounds used, as well as the presence or absence of other components, affect discharge capacity retention of a battery. Thus, it cannot be said that the applicant has carried his burden of showing that the claimed subject matter as a whole imparts unexpected results, thereby rebutting the prima facie case established by the examiner.

In summary, from viewing Examples A-1 to A-7 in Table 1 (applicant's specification at page 14), it can be fairly concluded that superior discharge capacity retention of a specific battery (specific battery components and material thereof are unclaimed and/or unknown), to certain extent, is obtained when only: a) adiponitrile in an amount of 0.05 to 1 weight %, or b) glutaronitrile in an amount of 0.2 wt % are used. Other than that, there is no further evidence to substantiate that the entire claimed range of 0.001 to 10 wt % and/or other dinitrile compounds such as those recited in claims 16 (with the exception of adiponitrile or glutaronitrile) will produce a battery exhibiting the same superior discharge capacity retention.

### ***Conclusion***

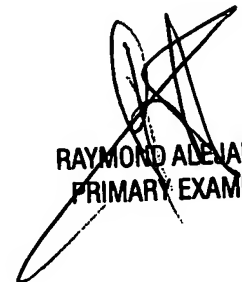
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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